PROJECT NUMBER: 4009
PROJECT TITLE: Smoke Studies
PROJECT LEADER: B. L. Goodman
PERIOD COVERED: July, 1988

PROJECT STUDIO

A. **Objective**: Develop subjectively acceptable cigarettes with reduced sidestream visibility.

B. **Results**:

Additional modifications to the Kimberly-Clark small particle size $CaCO_3$ paper were tested. Two different levels and types of carboxymethyl cellulose (CMC) with and without monoammonium phosphate (MAP) were evaluated in terms of subjective response and physical characteristics. The sidestream visibility was slightly lower for the new type of CMC and higher for the samples containing MAP. The presence of MAP reduced the frequency of stains behind the charline, while it had little effect on structural holes. Analytically there were only small differences between the samples.

A model with 4.9% succinate, 0.3% low substitution CMC, and 0.5% MAP was taken to the M/C panel along with the model having 4.7% succinate on the paper. There were no significant differences in acceptability, strength, or off-taste between the two models. The model with only succinate was rated as having more added flavor by the full panel as well as the low delivery smokers. Additional work will be done with both papers at different circumferences.

Ultraslim cigarettes were made with a variety of sidestream reducing papers giving a range of visibilities. Selected models will be used for a second study of comparisons between visibility reduction numbers by light extinction and as estimated by consumers' perceptions.

A five port instrument for measuring sidestream visibility has been installed in one of the conditioned labs in the CI area. Adjustments to airflow, hood design and light scatter have been done. A computerized output is being designed by CAD. The optical parts of the new system are similar to the current single port, but utilizes a white light as the source. Power surge associated with turning on the white light arc lamp have yet to be resolved. The light beam makes a triple pass across the smokestream in a narrow hood at a distance of 17 inches above the cigarettes. The smokestream is being pulled away by a vacuum pump at a flow rate that results in the cigarettes burning at the same rate as in CI's static burn time measurements.

The new system gives good uniformity from day to day with conditions held constant, but shows large differences when the location of the cigarettes within the hood is changed. Initial visibility numbers are similar to those obtained with the single port.

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C. **Plans**: Continue investigation of chemical loading on the $CaCO_3$ paper and development of high and low level $Mg(OH)_2$ wrappers.

Start using the five port visibility equipment for data collection.

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